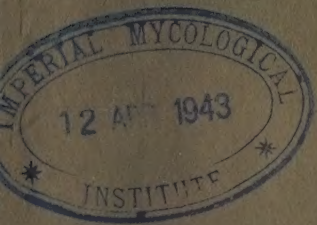


JAMAICA.

# ANNUAL REPORT

OF THE

## Department of Agriculture



FOR THE

Year Ended 31st March, 1942.

---

*Ordered by His Excellency the Governor to be Printed.*

---



PRINTED BY  
THE GOVERNMENT PRINTER,  
DUKE STREET, KINGSTON.

1942.







## CONTENTS.

---

|                                                                   | Page. |
|-------------------------------------------------------------------|-------|
| <b>SECTION I.—AGRICULTURE IN THE COLONY:</b>                      | 1     |
| <b>SECTION II.—WORK OF THE DEPARTMENT OF AGRICULTURE:</b>         |       |
| <b>A. Public Gardens.</b>                                         | 3     |
| <b>B. Agricultural Experiments, Education and Field Services:</b> |       |
| Experiment Station, Hope                                          | 4     |
| Cow Park Cane Nursery                                             | 4     |
| Sugar Cane Experiments                                            | 4     |
| Jamaica School of Agriculture                                     | 5     |
| Government Stock Farm, Hope                                       | 5     |
| Grove Place Stud Farm and Experimental Station                    | 5     |
| Veterinary Division                                               | 6     |
| Live Stock Division                                               | 6     |
| Plant Disease Inspection                                          | 7     |
| Charlton Demonstration Plot                                       | 7     |
| Citrus Development Work                                           | 7     |
| Crop Development                                                  | 7     |
| Produce Inspection                                                | 7     |
| <b>C. Research and Laboratories:</b>                              |       |
| Government Chemist's Division                                     | 8     |
| Agricultural Chemist's Division                                   | 9     |
| Entomological Division                                            | 9     |
| Botanical Division                                                | 10    |
| Plant Pathological Division                                       | 11    |
| Leaf Spot Control Division                                        | 12    |
| <b>D. Forestry</b>                                                | 13    |
| <b>E. Publications</b>                                            | 16    |
| <b>SECTION III.—LEGISLATION.</b>                                  | 17    |







## DEPARTMENT OF SCIENCE AND AGRICULTURE.

REPORT FOR THE YEAR ENDING 31st MARCH, 1942.

### SECTION I.—AGRICULTURE IN THE COLONY.

#### EXPORTS.

1. The principal agricultural exports for the year 1941 are as follows:—

|                                 | £         | Value.<br>£       |
|---------------------------------|-----------|-------------------|
| Sugar and Rum:—                 |           |                   |
| Sugar .. .. .                   | 1,585,000 |                   |
| Rum .. .. .                     | 264,675   | 1,849,675         |
| Bananas .. .. .                 | ..        | 900,696           |
| Pimento .. .. .                 | ..        | 151,662           |
| Citrus and Citrus Products:—    |           |                   |
| Oranges .. .. .                 | 35,169    |                   |
| Orange Oil .. .. .              | 70,787    |                   |
| Grapefruit .. .. .              | 4,770     |                   |
| Limes .. .. .                   | 1,008     |                   |
| Lime Oil .. .. .                | 14,924    |                   |
| Lime Juice .. .. .              | 826       | 127,484           |
| Coffee .. .. .                  | ..        | 111,903           |
| Cocoa .. .. .                   | ..        | 90,983            |
| Coconuts and Coconut Products:— |           |                   |
| Coconuts .. .. .                | 51,413    |                   |
| Copra .. .. .                   | 9,685     |                   |
| Coconut Oil .. .. .             | 936       |                   |
| Lard .. .. .                    | 6,417     |                   |
| Margarine .. .. .               | 17,170    | 85,621            |
| Ginger .. .. .                  | ..        | 72,828            |
| Dyewood and Dyewood Extracts:—  |           |                   |
| Dyewood .. .. .                 | 23,127    |                   |
| Dyewood Extracts .. .. .        | 39,789    | 62,916            |
| Honey .. .. .                   | ..        | 52,442            |
| Tobacco, Cigars .. .. .         | ..        | 46,435            |
| Hides and Goatskins:—           |           |                   |
| Hides .. .. .                   | 3,325     |                   |
| Goatskins .. .. .               | 20,744    | 24,069            |
| Annatto .. .. .                 | ..        | 4,845             |
| Bitterwood .. .. .              | ..        | 276               |
|                                 |           | <u>£3,581,835</u> |

2. In spite of difficulties brought about by war conditions exports kept up and were approximately £700,000 in excess of those for 1940.

#### WEATHER.

3. During the year under review weather conditions were on the whole favourable to agriculture. The island rainfall for 1941 was 7.50 inches below the average; in the first half of the year the precipitation was 11% above the average and in the second half 25% below the average. The drought which began in the middle of 1941 lasted to March, 1942. This adversely affected the production of food crops, especially corn.

#### SUGAR AND RUM.

4. Under wartime conditions the sugar industry has continued to expand. Not only has there been an increase in the total acreage in cane but a very much higher yield per acre has been obtained owing chiefly to the better weather experienced during the crop season. As a result there was a record production in 1941 of 156,552 tons of sugar of which 137,352 tons valued at £1,585,000 were exported as against 81,469 tons valued at £848,431 in 1940. The crop was again purchased by the Imperial Government. Weather conditions during the latter part of 1941 have been so unfavourable to canes as to affect seriously the prospect of a higher production of sugar for 1942.



5. For the 1941 crop cane farmers supplied 34% of the total quantity of cane ground instead of 25% as in previous years. The industry was strengthened during the year by the formation of an All-Island Jamaica Cane Farmers Association which was duly incorporated by Law 75 of 1941. In order to provide funds for the operations of the Association provision has been made for levying a cess at a rate not exceeding two pence per ton on all canes supplied by cane farmers to sugar manufacturers. The rate of cess for the 1941-2 crop has been fixed at one penny per ton.

6. Owing to shipping difficulties and lack of storage facilities the production of rum had to be considerably reduced. Only 442,003 gallons valued at £264,675 were exported in 1941 as against 1,065,720 gallons valued at £338,286 in 1940. Additional warehouses are in course of erection.

7. Of outstanding importance to the sugar industry in the West Indies was the formation of a West Indies Sugar Association as a result of a Conference which was held in this Island June 26th to July 9th, 1941, at which were present representatives from the various West Indian colonies. The main purpose of the new association is to promote research and scientific work and various other developments affecting the welfare of the industry. The first meeting of the new association was held in Trinidad in March, 1942, and was attended by three delegates from Jamaica.

## BANANA.

8. During the year the Imperial Government continued to assist the banana industry by guaranteeing the purchase of a fixed number of stems at the rate of 3/6 per count bunch. With the approval of the Secretary of State for the Colonies the sum of 3d has been deducted for each count bunch purchased in order to provide further supplies of materials for the control of Leaf Spot Disease. Exports to the United States and Canada fell from 6,849,042 stems valued at £1,045,480 in 1940 to 5,588,555 stems valued at £900,696 in 1941. Large quantities of fruit were available throughout the year for local consumption.

9. The biological control of the Banana Borer by means of the predators *Plaesius javanus* and *Dactylosternum hydrophiloides* has been continued with good results.

10. Panama Disease continued to increase and further areas where the disease has become epidemic have gone out of cultivation.

11. There has been no marked increase in the incidence of Leaf Spot Disease during the year. Control of the disease was maintained by spraying with Bordeaux or Perenox particularly by the larger growers. Considerable progress has been made by the Mycologist in the study of the etiology of banana leaf spot.

12. Climatic conditions were very favourable for the Banana Breeding Work and considerable progress was made during the year.

## PIMENTO.

13. The exports of pimento during 1941 were a little less than in the previous year as shown by the following figures for 1941, 3,246,994 lbs. valued at £151,662, as against 3,506,083 lbs. in 1940 valued at £119,152. Damage by Pimento Rust Disease was not as severe as in previous years.

## CITRUS.

14. No figures are available for the export during 1941 of citrus in the form of marmalade pulp but during the first three months of 1942, 14,668,475 lbs. were exported at a value of £122,687. This commodity is now reaching the purchaser in excellent condition, certain defects in the process of manufacture having been rectified on the advice of an expert who visited the Island during the year. With the encouragement of a ready market and good prices the development of the citrus industry has continued to progress and there has been a steady demand for the budded plants supplied by the Department. A total of 35,638 plants were distributed from the Government Nurseries during the year. Citrus is gradually taking the place of bananas in many areas badly infected by Panama Disease.

15. The price of orange oil advanced considerably. Exports for 1941 were 70,012 lbs. valued at £70,787 as against 61,330 lbs. valued at £20,532 in 1940. It was however found necessary to restrict the manufacture of orange oil as all the oranges available were required for marmalade pulp for the Imperial Government.

16. Measures recommended by Mr. Fennah, Entomologist, Citrus Investigation, Windward Islands, for the control of Citrus Weevil have been tried and proved successful. These consisted principally of removing the soil from underneath the crown of the main roots of citrus trees.

## COFFEE.

17. Exports of coffee fell from 5,862,496 lbs. valued at £113,847 in 1940 to 4,592,215 lbs. valued at £111,903 in 1941.

18. Efforts were made during the period under review to improve the quality of coffee exported from the Island. In September the Chief Inspector of Produce visited Haiti to investigate the methods adopted in that country in preparing coffee for the export trade. Regulations were subsequently made providing that only clean coffee beans from fully ripe berries which had not been dried on the ground should be offered for sale. If these regulations are strictly enforced the coffee exported from this Island should be able to compete successfully with coffee from other countries. Growers are co-operating well and improvement has already taken place in the standard of coffee being produced. Another Produce Inspector visited New York to study methods of cup-testing of coffee and it is hoped that a cup-testing room will soon be established.

## COCOA.

19. Cocoa exports for 1941 amounted to 4,921,548 lbs. valued at £90,983. This was more than double the quantity exported in 1940, while the price increased some 50%.

## COCONUTS AND COCONUT PRODUCTS.

20. Exports for 1941 remained low and amounted to 17,134,950 lbs. valued at £51,413. There was, however, a demand for copra and whereas there was none exported in 1940 a total of 1,332,743 lbs. valued at £9,685 was exported in 1941.

21. The coconut industry is now established on a firm basis under centralised control by the Coconut Control Authority and a Coconut Marketing Board both appointed by Government under Law 41 of 1939 which came into effect on the 6th March, 1942.

22. The price fixed for the purchase of copra is £22 7s. 6d. to £23 7s. 6d. per ton according to grade and is a great improvement on the pre-war price of £10 per ton.

23. There was considerable increase in the production of lard and margarine as coconut products. A total of 921,393 lbs. valued at £23,587 was exported in 1941 as against 101,744 lbs. valued at £2,926 in 1940.

## FOOD PRODUCTION.

24. In September, 1941, a Food Production Co-ordinating Committee was appointed to replace the Food Production Board and the policy of direct planting by the Board was discontinued. With the co-operation of the Field Officers of the Jamaica Agricultural Society an intensified campaign was made to encourage increased production of food crops by small growers while the Marketing Division offered fair prices for the crops grown.

24a. Towards the end of the year the restriction in rice supplies and reduction in shipping facilities made it evident that it would be necessary to accumulate stocks of food in the Island to meet possible shortages arising out of storms or total absence of shipping.

24b. It was concluded that the assistance of the large planter would be necessary if the extensive areas of crops required to produce such a surplus were to be obtained. With this in view the Foodstuffs (Production) Order, 1942, was introduced under the Defence Regulations, which required each owner or occupier of more than 100 acres to plant 1 per cent. of his area in scheduled food crops immediately, and a further 1 per cent. at a later date.

24c. Registration was restricted during the year to include only those crops which could store. The number of growers registered was considerably less than that in the previous year.

## LIVESTOCK.

25. The Dairy Industry has continued to expand and at the end of the year under review there were 42 Livestock Improvement Centres in operation throughout the Island. In areas where it has not been found practicable to establish a centre and where there is a sufficient number of animals privately owned sires are subsidized for public service. The services for the year totalled 12,961, an increase of 4,915 over the previous year.

26. A further aid to the development of the industry was provided by the Agricultural Loan Societies Board which instituted a system of granting loans for the purchase of dairy cattle.



27. Owing to circumstances brought about by the war resulting in an increase in the island population and a failure of imported meat and fish a shortage of beef cattle was experienced during the year. An Advisory Committee on Livestock and Meat Control was appointed to deal with the situation. The Committee instituted a system of quarterly returns of cattle in order to determine the number of cattle in the Island and the available sources of meat supply. The licensing of butchers and weekly returns of animals slaughtered by them were also provided for. It is proposed to introduce legislation for an improved system of marketing of livestock in the Island.
28. During the year the Jamaica Cattle Owners Association was formed and registered as a limited liability company.
29. There was a marked increase in interest in small stock, chiefly goats, pigs, poultry and rabbits, by agriculturists and as projects in connection with the recently established 4-H Clubs in the Island. Importations were made from Canada of Berkshire pigs (2 boars and 1 sow) in order to provide more breeding stock for sale. Some Tamworth pigs (2 sows and 1 boar) were also imported and a herd started at Grove Place. It is hoped that this latter type of pig will prove more suitable for the production of bacon than the Berkshire breed which under local conditions tends to produce a carcass which carries too much fat.
30. Importations were also made from Canada of White Leghorn and Rhode Island Red poultry to provide additional breeding stock.
31. Outbreaks of Hog Fever occurred during the year but were controlled by precautionary vaccination.
32. Investigational work on fodder and pasture crops was continued.

### AGRICULTURAL EDUCATION.

33. During his stay in the Island Sir Frank Stockdale, K.C.M.G., visited the Jamaica School of Agriculture and expressed his appreciation of the work being done at that Institution. It is expected that recommendations for extending its scope will be included in his report. If the school and the Stock Farm with which it is closely associated are to expand to provide accommodation for a larger number of students more land will be needed and land better suited than that found on the Liguanea Plains. It is proposed to move the School and Farm to a better location in the country and 545 acres of land, part of the property known as Lyndhurst adjoining Grove Place in the parish of Manchester, have been acquired for the purpose.

### FORESTRY.

34. During the year the activities of the Forest Division were concentrated on the consolidation and settlement of Forest Reserves under the re-organised field staff. Extension of experimental afforestation, encouragement of use of local timbers and routine constructional work under the forest roads and buildings programmes were also undertaken. Further forest development was limited by lack of funds but plans for programme development were prepared and approved by Government and by Sir Frank Stockdale, K.C.M.G., and are under consideration by the Colonial Office.

### JAMAICA AGRICULTURAL SOCIETY.

35. The Jamaica Agricultural Society has made further progress in its work of development and re-organisation. Working in full co-operation with the Department of Agriculture it is able through its Field Staff and its monthly Journal as well as through the recent organisation of 4-H Clubs to carry out valuable extension work among the agriculturists of the Island.

### WEST INDIAN DEVELOPMENT AND WELFARE COMMISSION.

36. Sir Frank Stockdale, K.C.M.G., Comptroller for Development and Welfare in the West Indies and Mr. A. J. Wakefield, C.M.G., Inspector General of Agriculture, together with other members of the Commission spent several months in the Island during the year investigating the agricultural, economic and social problems of the Colony. Their report has not yet been published.

### AGRICULTURAL CONFERENCE IN PUERTO RICO.

37. An agricultural conference was held in Puerto Rico in October, 1941, at which Jamaica was represented by the following delegates:—G. A. Jones, C.M.G., Director of Agriculture; H. H. Croucher, B.Sc., Agricultural Chemist; J. W. Howe, M.Sc., B.S.A., Headmaster, Jamaica School of Agriculture and Farm Superintendent; and A. F. Thelwell, Secretary of the Jamaica Agricultural Society. The programme of the conference included such subjects as Forestry, Extension Work, Soil Conservation, Farm Security, Work Projects, Administration, Vocational Education, and in addition visits were paid to the Insular Experiment Station and the Federal Experiment Station. As a result much information of a valuable nature was gained and it was proposed that further conferences on similar lines should be held periodically.

## SECTION II.—WORK OF THE DEPARTMENT OF AGRICULTURE.

38. The Department during the year has been short staffed and I desire to acknowledge my indebtedness to all those officers who have so willingly and cheerfully undertaken heavy additional duties as a result of the war.
39. It must be understood that owing to paper restrictions the following reports can show only in the briefest form the work covered by the various divisions during the year. Details and results of experiments cannot be given, but these can always be obtained from office records and by reference to the Divisional Officers concerned.

### A.—PUBLIC GARDENS.

40. Mr. M. S. Goodman, Superintendent of Public Gardens, and Mr. E. J. Downes, Horticulturist, report as follows:—

#### Hope Gardens.

41. *Flower Beds*.—The beds in the Sunken Garden, around the Band Stand and along the main drive were maintained throughout the year with attractive displays of Annuals, Poinsettia (*Euphorbia pulcherrima*) and June Rose (*Lagerstroemia indica*).
42. *Bougainvilleas*.—A collection of Bougainvilleas consisting of eleven varieties was planted out in large beds on the lawns to the north of the Tourist Rest. Included in these is the rare, white variety recently introduced into the Island.
43. *Orchids*.—The Orchid collection has been maintained in a satisfactory condition. 2,976 Cattleya blooms were displayed in the orchid house during the year, of which there were 811 blooms during the month of May. Progress has been made during the year in raising hybrid Cattleyas by the asymbiotic method.
44. *Cactus Garden*.—The new Cactus Garden was completed during the year and was planted with a varied collection of Cacti and allied plants.
45. *Empire Day Tree Planting*.—A total of 657 plants of flowering trees was distributed to the schools throughout the Island for planting in the school grounds on Empire Day.
46. *Aviary*.—A number of Budgerigars was presented to the Gardens for the Aviary by Mr. Stuart Black and Mr. K. O. Streadwick.
47. *Drinking Fountains*.—Three drinking fountains to supply visitors with filtered water were erected in the Gardens by the Water Commission.
48. *Repairs and Improvements to Buildings and Roads*.—Extensive repairs were made to the Plant Houses and new gates were erected at the Gordon Town Road Entrance. Four compartments were added to the Solar Propagators.
49. *Distribution of Plants*.—A total of 66,410 plants was distributed during the year under review. Of the number, 55,903 were sold and 10,507 were free grants. The total amount for plants sold during the year was £671 12s. 11d.

#### King's House Gardens.

50. *New Patio Garden*.—A Patio Garden has been laid out near the dining room and furnished with a pool, Bird Bath and fountain as well as a variety of suitable plants.
51. *Extension to Wild Garden*.—The Wild Garden has been extended by the inclusion of an adjoining piece of land in which pathways and borders have been laid out.
52. *Extension of Shrubberies and Flower Beds*.—The Shrubberies along the west drive were extended and flower beds opened up on the lawns.



## Kingston Public Gardens, Castleton Gardens, Cinchona Hill Gardens.

53. These Gardens were maintained in a satisfactory condition during the year under review.

### Royal Naval Air Station, Palisadoes.

54. The Horticulturist was requested to landscape the grounds at the Air Station on the Palisadoes and 3,821 plants were supplied free from Hope Gardens for this work.

### Rainfall.

55. The Rainfall at the various gardens for the year was as follows:—

| Hope<br>Gardens. | Castleton<br>Gardens. | King's House<br>Gardens. | Hill<br>Gardens,<br>Cinchona. | Public<br>Gardens,<br>Kingston. |
|------------------|-----------------------|--------------------------|-------------------------------|---------------------------------|
| Ins.             | Ins.                  | Ins.                     | Ins.                          | Ins.                            |
| 36.70            | 71.83                 | 28.47                    | 53.29                         | 19.61                           |

## B. AGRICULTURAL EXPERIMENTS, EDUCATION AND FIELD SERVICES.

### EXPERIMENT STATION, HOPE.

56. Mr. M. S. Goodman, Superintendent, reports as follows:—

57. *Weather.*—The rainfall at the Station for the period under review was 36.70 inches. This was the lowest rainfall recorded for many years but owing to its good distribution over the period the drought was not as pronounced as in some years with a better rainfall but poor distribution.

58. *Distribution of Cane Varieties.*—During the year, 196,626 tops and cuttings were distributed. Of this total 37,385] were distributed from the Long Pond Cane Nursery in Westmoreland and 61,630 from the Cow Park Cane Nursery. This does not include 56,100 also sent out from Cow Park for observation plots on estates. Only varieties that are resistant to Mosaic Disease are distributed to small cane farmers.

59. *Mosaic Disease Tests.*—During the year several new varieties were being tested for resistance to Mosaic Disease.

60. *Citrus.*—A fairly large number of budded Navel and Valencia orange plants were sold during the year.

61. *Diseases.*—Mosaic Disease was prevalent in the susceptible varieties. Eye Spot occurred chiefly in F.C.916 but not to the extent of the previous year.

### COW PARK CANE NURSERY.

62. Mr. M. S. Goodman, Superintendent, reports as follows:—

63. All cane varieties received from the Plant Quarantine Station, Trinidad, are sent direct to this nursery for propagation. They are multiplied as quickly as possible and set out in Observation Plots in this nursery.

64. The following varieties are in Observation Plots and will be sent to Estates to be grown also in Observation Plots. Mosaic Disease tests are also being made on these seedlings at Hope.

B.37157, B.37175, B.37163, B.38260, B.38203, B.38192, B.38233, B.38270, B.38202, B.38154, B.38187, B.38197 and B.34120.

In these plots B.34104 and B.35187 are grown for comparison.

65. During 1941 the newly formed Central Committee visited the Observation Plots and discarded the following varieties—

B.37164, B.37154, B.37174, B.37176, B.3482, B.3575.

The remaining varieties, B.3419, B.3520, B.3525, B.3521, B.3371, B.34123, B.35179, B.35197, B.35207, B.35214, B.37219, B.35245, B.35247, B.37161, B.37172, B.37181, B.37193, B.37194, B.37227, B.37259, B.35151, B.3540, were set out in Observation Plots on seventeen estates.

66. The following varieties were received from the Plant Quarantine Station, Trinidad, during the year—

B.3737, B.3703, B.3734, B.3708, B.3791, B.3774, B.3775, B.38212, B.37107, B.38178, B.38155, B.38230, B.38232, B.39198, B.39199, B.39237, B.39257, B.39219, B.39192, B.39213, B.3777.

Some of these will be set out in Observation Plots during the coming year.

### SUGAR CANE EXPERIMENTS.

67. Mr. M. S. Goodman, Superintendent, reports as follows:—

68. *Weather.*—The rainfall covering the period of the crop reaped in 1941 was very favourable for cane growing and was fairly well distributed, especially in the cane areas on the northern and southwest coast of the Island, with the result that even in the areas where no irrigation is practised the crop did not suffer any setback from prolonged drought.

69. There was a cloudburst in November, 1940, along the coast from Portland to Trelawny when cultivations were damaged and cane to be reaped in 1941 was drowned out in small areas where the drainage was poor.

70. During 1941 the rainfall although below the average was fairly well distributed. The heavy rains which should have fallen during September and October, when the canes make their greatest growth, did not materialise.

71. *Production.*—The output for sugar for 1941 was 156,552 tons. This is 57,269 tons greater than for the year 1940 which was one of prolonged drought which lasted until mid-October in some areas with the result that all cane cultivations depending on rainfall were extremely backward. It is estimated that the 1942 crop will be over 165,000 tons. This will depend on the weather conditions during reaping and on the sucrose and purity of the juice.

72. *Cane Committees.*—A Central Executive Cane Committee and five local committees for the five cane areas were formed during the year. The local committees consist of a chairman and the managers of estates in each cane area. The Central Executive Cane Committee is made up of the Chairman of each of the cane divisions with the Superintendent of Sugar Cane Experiments as Chairman. This Committee is responsible for naming the estates on which observation and variety experiments are to be set out, for decisions on the merits of each of the seedlings grown in the observation plots at this nursery and for the elimination of any seedling which in their opinion is not worth extending to other observation plots.

73. *Varieties.*—Several new seedling canes were set out in Observation Plots on Estates. These Plots are under the care of a local Committee for each cane district.

74. The local committee is responsible for the care and treatment of these plots and are also to make notes on each seedling and present these notes, at the end of twelve months growth of the seedlings, to the Central Committee who are responsible for the Observation Plots and any variety experiments laid down on the estates. It is pleasing to report that from the beginning the planters have taken great interest in these Observation Plots.

75. There are also several variety plots on the estates laid out with some of the latest seedling canes received from the Plant Quarantine Station, Trinidad. These were set out in areas in accordance with their resistance to Mosaic Disease and were also tested for their adaptability to poor or good soil conditions. Results of these experiments will be published in a separate Bulletin.

76. B.H.10/12 is still the premier variety being cultivated and represents about 40% of the area in cane. The yields from plant canes and ratoons of this variety are better on the light, fertile soils than on any other soil. The yields of ratoons would be better if these were not so heavily infected with Mosaic.

77. E.K.28—The area in this variety still continues to give good yields as plant canes but, probably due to Mosaic effect, fails to maintain its yield in ratoon.

78. M.P.R.28—The cultivation of this cane has been increased in one section of the Island where the soil appears suitable for its growth. It ratoons fairly well in this area and has a high sucrose content and good juice purity.

79. B.3439—This cane is being increased rapidly in certain areas of the Island. Wherever it has been reaped it has given good tonnage as plants and ratoons and the juice is excellent. This cane will probably take the place of P.O.J.2878 and B.H.10/12 in several cane areas as it is fairly resistant to Mosaic.

80. B.34104—This cane in the Variety Experiment Plots has given far better tonnage as plants and ratoon than any other cane. It is being extended rapidly in spite of its susceptibility to Mosaic Disease. It appears that the ratoons do not suffer from the effects of Mosaic. If this cane were more resistant to Mosaic it would take the place of both B.H.10/12 and P.O.J.2878. It does not appear as if it will do as well as P.O.J.2727 in the poor and shotty soils.

81. P.O.J.2878 and P.O.J.2727 still maintain their position in cultivation—one being favourable for planting in badly infested Mosaic Disease areas and the other for poor and shotty soils.



82. *Yields.*—The average yield of canes per acre for the Island is the highest on record. The yields of ratoons were extremely good. This is undoubtedly due to the favourable growing conditions experienced during the previous reaping season and the good distribution of rainfall which followed.

83. The average yield of cane for plants and ratoons for the 1941 crop was over 30 tons per acre while for 1940 the average yield of canes was only a little over 24 tons per acre.

84. *Cane Farmers.*—Farmers' canes played a most important part in the high production of sugar. While the increase for estate canes this year over last year was 44½%, it is interesting to note that for the same period the increase for Cane Farmers was 125%. This places the Cane Farmer in a most prominent position as he has this year produced over one half as much cane as the estates.

85. One of the chief causes for the rapid increase in farmers' canes is the spread of Panama and Leaf Spot Diseases in the banana fields.

86. *Experiments.*—Variety experiments are in progress on several estates throughout the Island.

87. *Diseases and Pests.*—Mosaic Disease is still very prevalent in certain areas and it is regretted that sufficient precautions are not taken to reduce infection in some areas. In some areas the resistant variety, P.O.J.2878, is planted to control the infection regardless of whether it is the most suitable variety for the conditions existing in the area.

88. Eye Spot was again very troublesome on the F.C.916 this year, but it was not a general infection throughout the Island on this variety.

89. Moth Borer was very evident both in the field and at the factory. Some of the new seedling canes were badly infected by Moth Borer.

### JAMAICA SCHOOL OF AGRICULTURE.

90. Mr. H. C. Miller, Acting Headmaster, reports as follows:—

91. *Enrollment.*—Enrollment during the year averaged 60 students of whom 24 were given scholarships.

92. *New Students.*—84 candidates applied for admission to the School in September. There were 12 vacancies available.

93. *Graduation.*—The Annual Graduation was held on the 10th July, 1941. Sir Frank Stockdale, Comptroller, West Indies Welfare and Development, presided and presented Diplomas in Practical Agriculture to 19 Students.

94. *Health of Students.*—The health of students has been good throughout the year. Cases of illness consisted of minor ailments of a non infectious nature.

95. *Scholastic Work.*—The course at the School has been improved by increasing the time allotted for instruction in Surveying. Other courses of study as outlined in the curriculum were maintained. Improved facilities for instruction in field husbandry have been made possible by the appropriation for purposes of a School Garden of a plot of 3 acres of land for which irrigation water is available.

96. *Non Scholastic Activities.*—The School Student Christian Movement Branch has been active. The students took part in the Evelyn Cup and "A" Division Junior League Competitions.

97. *Advisory Board Meeting.*—One meeting of the Advisory Board was held during the year.

98. *Staff.*—Mrs. K. Dutton Turner replaced Miss E. Miles as Matron during the year. Mr. C. R. March was appointed Student Assistant for special training in livestock work.

### GOVERNMENT STOCK FARM, HOPE.

99. Mr. H. C. Miller, Acting Farm Superintendent, reports as follows:—

100. *Weather.*—The total rainfall for the year was 36.70 inches, the lowest recorded at Hope since 1930.

101. *Live Stock.*—Total head of live stock as at 31st March was 448. Poultry numbered 102 exclusive of baby chicks and the total valuation of all livestock was £7,273 8s. 0d.

102. Health of livestock has been good.

103. Sales of livestock totalled 149 including 80 bull calves and 38 heifer calves sold for rearing. 6 grown stock and 25 veal calves were sold to the butcher.

104. Sales of poultry included 19 males and 3 female grown birds, 82 baby chicks, 31 dozen eggs for hatching and 204½ dozen eggs for table use.

105. *Dairy Products.*—Milk production totalled 310,464½ quarts of which 278,444½ quarts were sold. A total average of 183.2 cows were milked giving an average production per cow of 4.64 quarts. The average butterfat content was 5.5%.

106. *Experiments.*—Experiments undertaken during the year included:

(1) Manurial Experiment on Guatemala Grass.

(2) An optimum period of cutting experiment on Guatemala Grass, Guinea Corn, Uba Cane and C.O.213.

(3) An experiment on the construction of Pit Silos for the testing of various imported fodder crops.

(4) Terracing.

107. *Extension Work.*—The usual advisory work including replies to requests for information on live stock and demonstrations to visitors to the Stock Farm has been maintained.

### GROVE PLACE STUD FARM AND EXPERIMENTAL STATION.

108. Mr. L. A. Powell, Acting Agricultural Superintendent, reports as follows:—

109. In addition to my duties as Superintendent of Grove Place, I continued to assist in the Livestock Division as Livestock Field Officer of the Central Division.

#### Weather.

110. The Rainfall for the calendar year 1941 was 77.85 inches, distributed over 122 rain days.

#### Experimental Station.

111. All sections of the Station were maintained during the year. Long range fertilizer experiments with citrus and bananas were continued according to plan.

112. Fertilizer trials with maize, sweet and Irish potatoes were conducted under the direction of the Agricultural Chemist.

113. *Citrus.*—The third crop was reaped and the necessary records taken for analysis. Measurements of all trees were taken twice and fertilizer applied three times during the year. The survey for the control of Fiddler Beetles and Slugs was continued.

114. *Bananas.*—The fertilizer experiment was terminated at the end of the year owing to the inroads of Panama Disease. This, however, was not until after reaping three crops. It is proposed to continue the spacing experiment which was started in 1939.

An Observation Plot of five acres, set out 9x9, was established during the year.

115. *Avocado Pears.*—The majority of these varieties have made very good growth. A few bloomed during the year although not yet two years in the field.

116. *Tahiti Limes.*—Plants budded on West Indian Lime, Rough Lemon and Sour Orange were set out in an observation plot. The development of individual plants has been very irregular.

117. *Fodder Crops.*—Of the many new grasses introduced last year, a few show signs of promise and these are being encouraged and extended to fair sized plots.

118. *Nursery.*—This consists of cedar, citrus, coffee and bitter damsel seedlings. Fully 3,000 cedar seedlings were set out in the hilly sections of the property, while 2,800 bitter damsel seedlings were distributed.

#### Livestock.

119. All classes of livestock maintained good health except some of the goats which were subsequently transferred to Hope. All young stock were vaccinated against Blackleg and the whole herd against Anthrax. All animals at the piggery were vaccinated against Swine Fever.

120. *Dairy Produce.*—Milk production totalled 40,423.75 quarts indicating an average daily yield of 110.8 quarts. The average number of cows milked daily was 26.4 with an average of 4.2 quarts per cow per diem. The quantity of milk available for the manufacture of butter was 24,954.45 quarts, which yielded 2,994.49 pounds, or an average of 8.3 quarts to the pound.

121. *Stud Services.*—The Farm received increased patronage and interest in the livestock industry was maintained.

#### Agricultural Education.

122. The senior students of the Jamaica School of Agriculture attended for half of each term and received instruction in Practical Agriculture.

123. Three very successful Field Days were organised and conducted for the benefit of agriculturists.



## VETERINARY DIVISION.

124. Dr. S. Lockett, Senior Veterinary Officer, reports as follows:—

### Disease Control.

Field work dealt mainly with:—

125. *Anthrax*.—No outbreaks were established during the year, although several reports were investigated. Seasonable preventive vaccination was maintained in known infected and suspected areas, either by owners themselves or directly by the Department. 692 mixed stock were officially vaccinated in two parishes.

126. *Swine Fever*.—(i) Outbreaks occurred in several areas or districts of Kingston and St. Andrew, St. Catherine, St. Thomas, Portland and St. Mary. (ii) Vaccination with B.T.V. (Boynton's Tissue Vaccine) was extensively and successfully employed for its control in exposed areas. 2,721 swine were so vaccinated in 20 months ending 31.3.42 in seven parishes.

127. *Bovine Tuberculosis*.—(i) The general survey by tuberculin testing initiated 1940-41 was not continued during the year, because of lack of staff.

(ii) Tests of 5 herds (470 cattle) showed 13 positive reactors—2.1% infection.

128. *Blackleg*.—The disease is widespread throughout the Island. In general large owners vaccinate their own cattle and the Division assists the peasantry. 646 cattle were officially vaccinated in six parishes.

129. *Tick Fevers*.—(i) Texas Fever (*Piroplasmosis bigeminum*). Six sporadic outbreaks occurred in five parishes.

(ii) *Anaplasmosis* (*A. centrale* and *marginale*). Six sporadic outbreaks occurred in four parishes.

130. *Necrobacillosis* of goats is annually recurrent in many parts of the Island, especially where the grazing is of a thorny or spinous kind. Early treatment with official tar ointment has proved an effective remedy.

131. *Helminthiasis*.—It has not been possible to organise any extensive field programme with respect to this group of diseases. Informative leaflets on some of the commoner parasites are issued to enquirers.

132. *Poultry Diseases*.—The incidence of the three chief infections—fowl pox, (contagious *epithelioma*.) roup and fowl cholera, (avian hemorrhagic *septicaemia*) was about the same as in previous years. Vaccination for their control is increasingly practised.

### Veterinary Education.

133. Lectures and demonstrations in veterinary science were given in the Jamaica School of Agriculture in accordance with its curriculum in so far as the other duties of the staff permitted.

134. Lectures on veterinary subjects were given at (i) two conferences at Hope between the Department and the Jamaica Agricultural Society, (ii) Elementary School Teachers' Summer Conference, (iii) the Liguanea and Greenwich Farm branches and the Manchester Associated Branches of the Jamaica Agricultural Society.

135. Two Broadcasts from the local Station were given on "Fluke Disease of Cattle and Sheep" and subsequently an article on the subject was published in the Journal of the Jamaica Agricultural Society, and reprints issued to penkeepers.

## LIVE STOCK DIVISION.

136. Mr. J. W. Howe, Live Stock Officer, reports as follows:—

137. During the year under review, the rainfall was light in many areas and the year generally could not be considered a good one for live stock.

### Live Stock Improvement Centres.

138. There were 42 Live Stock Improvement Centres in operation during the year and the total number of services given including subsidized sires was 12,961 an increase of 4,915 over the previous year. The numbers were made up as follows:—Jacks, 94; bulls, 4,001; boars, 2,070; ram (goat), 6685; ram (sheep), 111.

139. The subsidized sire service was extended and during the year 28 sires were subsidized under this scheme. A total of 602 services was given.

### Field Days.

140. A Field Day was held at each of the Live Stock Improvement Centres during the months of June, July and August in which demonstrations and lectures on problems concerning live stock were given. The total attendance for these Field Days was 3,704. It is hoped to make this an annual feature of the Live Stock Extension Work.

### Fodder Crops.

141. Ten observation plots for new varieties of grasses and fodder crops were established in various points of the Island in order to test out the various varieties under different conditions of soil, temperature, altitude, and rainfall.

### Importation of stock.

142. During the year the following live stock was imported:—

Pigs—Berkshire: 2 boars and 1 sow.

Tamworth: 2 sows and 1 boar.

Poultry—White Leghorn: 1 cock and 2 pullets.

Rhode Island Red: 1 cock and 3 pullets.

### Piano Grass Eradication Experiment.

143. An experiment was laid down at Good Hope in Trelawny to control Piano Grass which is becoming a serious pest in some areas in the Island.

### General Extension Work.

144. The Field Officers of the Live Stock Division undertook general extension work throughout the year in connection with the improvement of live stock. Instruction was given in the following subjects:—

(1) Castration.

(2) Selection of proper type of stock and importance of good breeding.

(3) The use of local feeds for various classes of live stock.

(4) Housing requirements for live stock and the use of local materials for construction.

(5) Disease and their control.

145. The Live Stock Field Officers assisted the Senior Veterinary Officer in controlling outbreaks of Black Leg and Swine Fever in several parts of the Island.

146. The Live Stock Field Officers also inspected and branded dairy cattle on which loans had been made by the Agricultural Loan Societies' Board.

### Cattle Owners Association.

147. Assistance was given in the organization of a Cattle Owners' Association and the Jamaica Cattle Owners' Association Limited was registered as a limited liability company.

### Conference—Puerto Rico.

148. With 3 other members of the Department I attended a conference of the Agricultural Departments in the Caribbean area, held at Puerto Rico from October 28th to 31st, 1941.



## Live Stock and Meat Control.

149. In January I was appointed Deputy Chairman of the Advisory Committee on Live Stock and Meat Control. An Office was set up at Hope and the work in this connection is handled through that office. Quarterly Cattle Returns and Licensing of Butchers were undertaken.

150. Owing to the increased demand for beef and the shortage of beef cattle, combined with a drought, there has been a shortage of supply in several of the markets in the Island.

## PLANT DISEASE INSPECTION.

151. Mr. J. B. Sutherland, Supervising Inspector of Plant Diseases, reports as follows:—

152. Surprise visits were constantly made on the Inspectors of Plant Diseases who performed their duties satisfactorily. A survey of banana areas was carried out by four Inspectors under the direction of the Plant Pathologist. Banana suckers were supplied to the Government Experiment Plot.

153. Panama Disease still menaced the banana cultivations throughout the Island. Inspectors of Plant Diseases carried out treatment, giving up areas to salvage where the disease was found in epidemic stages.

154. Every encouragement was given to settlers to spray for Leaf Spot. Observation reports on fields being sprayed were submitted weekly. In the middle of the year Inspectors were called upon to remove pumps and spraying cards from planters who failed to spray their banana fields.

155. There were sporadic cases of Bud Rot of Coconuts in the eastern end of the Island but prompt attention was paid to the cutting down and burning of affected trees.

## CHARLTON DEMONSTRATION PLOT.

156. Mr. J. B. Sutherland, Supervising Inspector of Plant Diseases is in charge of this plot and reports as follows:—

157. The plot on the Charlton Land Settlement is being run on a working account as a small settler ought to do. The citrus orchard, established five years ago, gave its first crop this year, the accounts consequently showing a profit.

158. Citrus, coffee, vegetables, yams and plantains are grown to demonstrate methods of general cultivation.

## CITRUS DEVELOPMENT WORK.

159. Mr. J. B. Sutherland, Supervising Inspector of Plant Diseases, who is in charge of the nurseries, reports as follows:—

### Citrus Nurseries.

160. A continuous demand was made on the nurseries throughout the year. The experience gained by avoiding the supply of flushing plants after drought periods was strictly pursued and the death rate has been reduced to a minimum.

161. One hundred quarts of sour orange seeds were sown and 6,000 seedlings were given to Grove Place. 31,000 budded plants were distributed from Charlton and 4,000 from the Tamarinds Nursery, bringing the total to 35,000 plants. Of this 35,000 plants, 3,000 were given to the Irwin Land Settlement in St. James.

162. Visits to young groves were constantly carried out and advice on care of plants given. There are now 70,000 budded plants at Charlton and with good seasons a large acreage will be planted this year.

163. A new site, consisting of about three acres, has been secured from the St. Catherine Prison and some 15,000 plants have been laid out for the 1943 supply.

164. Mr. L. L. Carrington, Acting Agricultural Superintendent, reports as follows:—

### Field Work.

165. In Dry Harbour Mountains the opening attempt has justified the movement though it will require much care. There are four Demonstration Plots in the area.

166. Very recent plantings at Brown's Town should be followed up to a successful issue.

167. Planting at Bamboo has revived very considerably owing to results from one or two efforts started in 1934.

168. Work in Manchester is progressing and is yielding exportable crops. Many small planters are coming into the picture and are making fair livings.

169. At Riversdale results are good and an extension of forty acres is just opening.

### Land Settlements.

170. Although much work has been done on these Settlements there is not a great measure of success. One, however, at Charlton is opening on a large scale, approximately 1,000 plants being already set out contiguously. Irwin has been supplied with over 3,000. Barry and Lloyds have now made a promising start. Mocho and Ramble are also good. Dinthill has five acres recently planted and approximately one acre in production. Work has been done among student settlers at Rose Hall.

171. Demonstration plots at (1) Islington, (2) Highgate and (3) Llandewey are all in bearing, and four new ones in Dry Harbour Mountains are on the road to being well established.

## Citrus Development Loan Scheme.

172. Under this Loan Scheme 45 groves comprising 548 acres have been developed. Many have already begun to reap returns and a profitable showing is expected in the coming season.

## Wakefield Manurial Plots.

173. This has continued to develop in a very satisfactory manner. 1,108 grapefruit and 96 Valencia orange plants are well established here and over half a box per tree has been reaped in the first period. Only 486 of these trees appear in the manurial test, but other trees are being employed in sub-experiments involving pruning, mulching and forking.

## CROP DEVELOPMENT.

174. Mr. G. K. Argles, Crop Development Officer, reports as follows:—

175. The work of the Division was concentrated on the vegetative propagation and distribution of trees of avocado, mango and Tahiti lime.

176. 2,158 avocado trees of 14 American varieties were distributed, 1,385 of these being planted in 13 new variety trials or used to complete the 16 trials started in 1940-41, and the balance of 773 trees being sold.

177. 3,689 mangoes were distributed consisting of the following varieties: Bombay, 2,163; Haden, 956; Julie, 554; Nelson, 16.

178. 5,286 Tahiti limes were distributed, 3,521 being on rough lemon stock, 1,752 on West Indian lime and 13 on sour orange stock.

## PRODUCE INSPECTION.

179. Mr. P. W. Murray, Chief Inspector of Produce, reports as follows:—

180. *Activities under Produce Law.*—All regulations were actively enforced particularly in respect of coffee, bananas and citrus and the quality of exports was maintained in spite of a reduced staff of Inspectors. There were heavy rejections of bananas on account of lack of cultivation and leaf spot disease.

181. *Revenue from Licences.*—The total revenue from licences was £3,488 as compared with £2,723 for year ending March, 1941—an increase of £775.

182. *Court Cases.*—There were no increases over last year when there were 15 cases. This is attributable to closer observance of the Produce Law and its Regulations.

183. *Detention and Destruction of Produce by Inspectors.*—Bananas, 28,725 stems; Citrus, 642 boxes; Other Produce negligible.



### Official Analyses.



188. 97 specimens of food, etc., analysed for poisons gave 18 positive results.

| No. | Poison found.                                   |
|-----|-------------------------------------------------|
| 7   | Arsenic—in foods and articles used by suicides. |
| 7   | Cresols—in foods and articles used by suicides. |
| 1   | Phosphorus—in cooked food.                      |
| 1   | Perenox—(Insecticide) in coffee.                |
| 2   | Powdered glass—in foods.                        |

### Court Cases.

189. 462 Certificates were issued to the Police. The Government Chemist attended Circuit and other Courts on 64 occasions to give evidence on behalf of the Crown. These include one murder case which was tried at Grand Cayman, and one murder case tried at Kingston, beside eleven other cases for shooting with intent either to murder or to inflict grievous bodily harm. Two trips were made to the *locus in quo* in a case of murder by shooting and an arson case respectively.

### Sales and Fees.

190. The following articles were sold to the public:—

|                               |    |    |              |
|-------------------------------|----|----|--------------|
| Arsenite of Soda              | .. | .. | 16,280 lbs.  |
| Paranaph                      | .. | .. | 45,951 lbs.  |
| Standard Iodine Solution      | .. | .. | 38,950 c.c.  |
| Starch Solution               | .. | .. | 172 bottles. |
| Sodium Bicarbonate            | .. | .. | 50 bottles.  |
| Carbon disulphide             | .. | .. | 351 lbs.     |
| Thymol Powders                | .. | .. | 192 packets. |
| Rat Poison (in bulk)          | .. | .. | 75 lbs.      |
| Rat Poison (in 1 oz. packets) | .. | .. | 128 packets. |
| Fly Killer                    | .. | .. | 225½ gallons |
| Book Poison                   | .. | .. | 4½ gallons.  |

191. Revenue derived from 1st April, 1941 to 31st March, 1942, was as follows:—

| Fees for analyses. | Sales.          | Stamp Duty.  |
|--------------------|-----------------|--------------|
| £133 3s. 6d.       | £1,560 2s. 11d. | £12 18s. 0d. |

### AGRICULTURAL CHEMIST'S DIVISION.

192. Mr. R. F. Innes, Acting Agricultural Chemist reports as follows:—

193. The division has been handicapped by the vacancies of the positions of Senior Agricultural Superintendent, Senior Technological Assistant and Statistical Technical Assistant.

194. *Routine Laboratory Analysis* has been continued throughout the year—soil analyses forming the majority. Miscellaneous analyses included samples of phosphate deposits, fertilisers, insecticides and fungicides, citrus pulp and banana leaves.

195. *Soils*.—Advisory work, mainly dealing with ecological problems was continued. Various means of solving these problems were investigated and appropriate recommendations made.

196. A part of Lower Clarendon was resurveyed in greater detail this year in order to assess its agricultural value.

197. Advice was also given on the suitability of various clay types for tile and brick manufacture.

198. The investigation of the phosphate reaction of the Red Limestone Soils of Jamaica, (the major soil type of the Island) has been continued with the main object of making possible the intelligent manuring of this type of soil. This work is being extended.

199. The effect of mulch on the retention of manures and on soil moisture content is being investigated at Grove Place. It has been shown that mulching does increase soil moisture content, while green manuring has the opposite effect.

200. Investigations by Dr. H. F. Birch, Assistant Agricultural Chemist, on the chemical status of the Grove Place and Bull Savannah soils are now virtually complete, and laboratory experiments on their behaviour towards applied phosphates are proceeding. The soils are characterised by their high contents of hydrated iron and aluminium oxides and their power to fix phosphorus in a form difficultly available to plants. Laboratory percolation studies have shown that there is little penetration of applied soluble phosphates below a depth of one inch, and it is likely that the soils would allow much less penetration in the field.

201. Similar investigations on other red limestone soils have been initiated.

202. *Miscellaneous Laboratory Analysis* (See par. 196 above).—Numerous samples of local phosphate deposits have been analysed many showing a high value for agricultural purposes. Varied investigations of fodder grasses, citrus and banana pulp, have been undertaken.

203. *Seed Importation, Selection and Multiplication*.—This work had to be greatly curtailed because of inadequate staff (see paragraph 195). Replanting of seed supplies of the most promising food crop varieties was continued in order to maintain their viability.

204. *Field Experiments with Food Crops other than Citrus and Sugar Cane* were curtailed because of insufficient field staff. Varied manurial experiments with tomatoes, Irish potatoes, cow peas, soya beans, sweet potatoes and peanuts have been carried out with interesting results. Routine manurial and spacing experiments with corn and other food crops are being extended.

205. Effects of different grass barriers on the stability of Grove Place soils are being observed and also the effect of these barriers on food crop yields when the grass is used as mulch. The importance of keeping the *Terra Rossa* sub-soil at Grove Place covered has been demonstrated on the field.

206. *Citrus Manurial Experiments*.—At Grove Place the two existing experiments have been continued, the size of trees and the yield, quality and chemical composition of the fruit being recorded. Although no estimate of error is at present available, data indicates clearly that potash has produced a bigger tree—the effect being caused by the outstanding relative rate of growth during the first year after manuring was started. The double application of phosphate or nitrogen has been shown to be detrimental to tree size.

207. *Wakefield Experiment*.—The first crop of fruit was reaped and was graded for size, colour, thickness of skin, juice and the number of pips. Tree growth records were also kept. It is impossible as yet to conclude the statistical analyses. Turfing drains with crab grass sod proved very successful against soil “scouring”.

208. *Sugar Cane Experiments*.—In the main results show that adequate manurial and soil investigations are essential prior to large scale planting programmes.

209. Manurial experiments on different soil types have been continued throughout the year and new cane varieties have been compared against standard varieties already in cultivation under varying ecological conditions. The results of all these investigations have been published in the journal of the Jamaican Association of Sugar Technologists.

210. Three manurial and twenty-seven varietal experiments have been handed over to the New Sugar Investigation scheme of the Sugar Manufacturers' Association.

211. *Sugar Factory Reports* for the year were checked, averaged and redistributed weekly to all factories.

212. *Fertilizers and Feeding Stuffs Law*.—An amendment to this law of 1901, was drafted and passed through Council, thus bringing the law more into line with similar laws in Great Britain and Canada.

213. The acting Agricultural Chemist has acted as Secretary for six committees dealing with various problems connected to the Sugar Industry.

214. During the year four articles were prepared for publication by the acting Agricultural Chemist, one being written in conjunction with Mr. M. S. Goodman. Two articles dealt with sugar cane experiments and yields and two with spacing and manuring of maize.

### ENTOMOLOGICAL DIVISION.

215. Mr. W. H. Edwards, Entomologist, reports as follows:—

216. During this period the writer, in addition to the duties attached to his substantive post, performed those of Director of the Government Bureau on the Building Industry and also directed the Plant Inspection Service.

217. As from the 15th May, Mr. A. L. Reid, Junior Assistant, performed the duties of Plant Inspection Officer whilst performing his other duties. The Senior Laboratory Assistant, Mr. W. B. Dixon, continued the survey concerning termite damage in the Corporate Area. The services of Mr. E. F. Bullock, Technical Assistant, were dispensed with on the 31st August, 1941, and the appointment of another Junior Assistant is greatly needed.



## Agricultural Entomology.

218. *Banana*.—During the period under review, 220 adult *Plaesus javanus*, 85 *Dactylosternum hydrophiloides* and many eggs and larvae of those insects were distributed all over the Island. A detailed report on the importation and establishment of these insects was submitted to the Advisory Committee on the Banana and Citrus Industries. The total number of adults so far distributed are 1,563 *Plaesus* and 2,190 *Dactylosternum*; these have now been distributed in practically every important banana producing area. It is deplorable that on account of the incidence of Panama Disease and Leaf Spot many fields where the predators had been established are now no more cultivated in bananas.

219. *Citrus*.—Field trials concerning the removal of soil from underneath the crown of the main roots of citrus trees to protect these against attacks by the larvae of the Citrus Weevil have up to now proved successful. Collections of adults and egg masses of the Fiddler Beetle *Prepodes vittatus* has been systematically carried out in the groves at Grove Place where 429,729 adults and 64,030 egg masses were destroyed, whilst no damage as occurred previously was noticed.

220. The incidence of the Mealy Bug *Icerya montserratensis* is still confined to the outskirts of Christiana in Manchester.

221. Requests for advice concerning the control of scale insects were frequent at the beginning of the year, but it is feared that now that rejection for scars on the rind has been slackened, and insecticides and instruments are difficult to obtain, progress which had been made concerning scale insect control will sustain a setback.

222. *Sugar Cane*.—No outbreaks of insect pests were reported or noticed during periodical inspections. Surveys to ascertain the economic significance of the Moth Borer *Diatraea saccharalis* were continued.

### Termites.

223. During inspection of buildings the species *Heterotermes convexinotatus* was found 26 times, whilst *Coptotermes havilandi* was found 5 times and *Cryptotermes brevis* was found 9 times.

### Lectures.

224. Lectures were delivered at the Institute of Jamaica, at the Golden Spring Overseer's Training Centre, at the half-yearly meetings of the Manchester, Clarendon and St. Mary Branches Associated of the J.A.S. and at various Conferences and Organizations.

### Demonstrations.

225. Demonstrations were also given to planters, Agricultural Instructors, Land Settlement Officers and students of the Jamaica School of Agriculture.

### Publications.

226. Articles were published in the J.A.S. Journal. One Bulletin was published and three are being prepared.

### Committees.

227. The writer served on the following eight committees of which he is chairman of four: Wild Life Advisory Committee, Wild Life Sub-committee on Fish, Scientific Committee of the Institute of Jamaica, Committees on Revision of Building Codes and on the Importation and Storage of Lumber; Committees appointed to submit suggestions regarding the making of Educational Films and to award prizes for buildings of local materials.

### Miscellaneous.

228. The Museum of the Building Industry at the Institute of Jamaica was opened by His Excellency the Governor on the 11th September. A regional Museum of Agriculture was organized on the grounds of the Land Settlement Training Centre at Golden Spring.

## Plant Inspection Service.

229. These duties were taken over from Mr. Z. A. Daniels by Mr. Reid on May 14, 1941.

7,658 packages of fruits and vegetables were passed for consumption;

512 packages of fruits and vegetables were passed for transhipment.

13 packages of fruits and vegetables were destroyed.

7,649 barrels of seed potatoes from Canada were inspected and passed.

Of imported plants inspected, 40 were passed and 7 destroyed.

Four second-hand ploughs were passed.

19 Health Certificates were issued.

## BOTANICAL DIVISION.

230. Mr. L. N. H. Larter, Botanist, reports as follows:—

231. In addition to the duties of his substantive position the Botanist continued to carry out the duties of the Plant Pathologist until the arrival in the Island of the newly appointed Pathologist on the 25th of April.

232. Further increases in the activities of this Division have resulted from expansion of both the banana and maize breeding projects. Advisory work on general botanical matters, weed control and plant identification have also been extended, and attention has been given to the maintenance of the Departmental Herbarium.

### Banana Breeding.

233. Weather and climatic conditions were unusually favourable for the prosecution of this work during 1941. Losses of breeding plants from wind and rain were negligible. 7,845 stems were pollinated during the year and, as compared with 1940, the seed yield was increased from 2,514 to 14,125 and seedling output from 720 to 2,917.

234. Additional areas of Gros Michel totalling seven acres have been brought into use for breeding and three acres have been abandoned owing to Panama Disease infection. A nett increase of ten acres in the seedling breeding plots has been made.

235. *Primary crosses* between Gros Michel and immune wild diploid *Musa* in operation last year have been continued and a number of recently imported wild types have been brought into use as male parents.

236. *Backcrosses*.—A few seedlings have again been raised by back-crossing to Gros Michel but with one exception these show no promise of being of commercial value.

237. *F2 crosses*.—Crosses between F1 seedlings have been increased, 4,775 stems having been pollinated this year. Over 2,000 seedlings have been raised, but though few have yet fruited, the proportion of potential commercial types in these families promises to be low.

238. *F3 families*. (F2 x F2 and F2 x F1)—These crosses are still in the preliminary stages pending the selection of the best parental material from the F2 families.

239. *New Seedlings*.—Of the 2,917 seedlings raised 632 are derived from crosses between the Gros Michel and Highgate varieties as female parents and various diploid wild types as males, 63 are backcrosses, 2,201 are F2 and 21, F3 seedlings. 249 young seedlings died in the seed boxes and 397 unsuitable types have been discarded. 707 new seedlings have been established in the field and the fruit of 464 reaped. 53 initial selections have been made for further trial.

240. Planting material of the Trinidad seedling I.C.2 has been received and is being propagated for comparison with locally bred varieties.

241. *Variety Trials*.—The Latin square seedling variety trial is being continued and the randomised block trial in Vere has been completed, the results are now in process of analysis. Three more small randomised block trials have been laid down at Orange River and in Vere where a six-acre incomplete randomised block trial incorporating twenty-one varieties for final selection has also been established.

242. Controlled plantings of seedlings in *Fusarium* infected land for determinations of susceptibility to Panama Disease have been extended to twelve acres.



## Maize Improvement.

243. The selection and propagation of yellow corn suited to local conditions has been actively pursued. Two crops have been grown during the year under review and yields were considerably more satisfactory than in 1940 owing to more favourable climatic conditions. The acreages involved in selection and propagation were increased to 36 for the spring planting and to 48 in the autumn. The project has been complicated by the need for an early release of seed for general distribution and the appearance of recessive characters for dark seed colour. For the former reason the work has been carried out on the basis of controlled mass selection and in spite of the latter, very considerable progress has been made in the elimination of the undesirable red types. It was found possible to distribute approximately 50 bushels of seed for the spring planting of 1942 and it is expected that around 400 bushels will be available for the fall planting.

244. A number of strains of a flint type with a richer yellow colour than that found in local varieties have been bred by the hybridization of local with imported varieties and these are being selected for stabilisation of type.

245. Variety trials have been continued as a check on yielding capacity of newly bred strains in comparison with established local varieties and also as a test of newly imported varieties. By this means previous experience, that imported foreign varieties will not compete in yield with local varieties, has been confirmed.

246. Inbreeding work has been continued on a small scale, but, owing to the rapid loss of vigour of inbred strains, many have been lost in the second and third generations. Work in this direction is nevertheless being continued with the more promising lines.

247. *Diseases and Pests*.—It is becoming increasingly apparent that low corn yields in this country are largely due to poor stands resulting from the use of inferior seed and the depredations of field mice, crickets, ants and similar pests in destroying seed immediately after planting. Experiments on the protection of seed from such damage are therefore being continued. *Laphygma frugiperda* has proved the limiting factor in the drier areas but is being effectively controlled in the experimental plots by the use of lead arsenate-nicotine sulphate spray. Damage from other common troubles such as weevil, pentatomids, *Heliothis*, smut, rust, leaf spots and ear and stalk rots have not been serious this year.

## Miscellaneous.

248. Special reports have been submitted on various aspects of the work of this Division, miscellaneous communications on subjects of current interest published in the Journal of the Jamaica Agricultural Society, and two broadcasts of a semi-popular nature on agricultural matters, delivered.

249. The sincere thanks of the Department are again due to the owners and executives of the various organisations who have so willingly co-operated in the field work of this Division, in particular to Messrs. Agualta Vale Ltd., S. Black, Esq., Messrs. Hawkins and Scott, P. Junor, Esq., Lindo Estates Ltd., New Yarmouth Estates Ltd., Potosi Estates Ltd. and the West Indies Sugar Company.

## PLANT PATHOLOGICAL DIVISION.

250. Mr. E. B. Martyn, Plant Pathologist, reports as follows:—

251. The Plant Pathologist arrived in the Colony on April 25th, 1941 and assumed duty on April 26th.

### Bananas and Plantains.

252. *Panama Disease*.—Panama Disease of Bananas (*Fusarium oxysporum cubense*, Schl.) continued to increase, though a dry year checked it to some extent. The total recorded numbers of cases treated, 684,085, new cases, 772, and recurrences, 667,619, were lower than for the previous year, owing to further abandonment of treatment and withdrawal of Plant Disease Inspectors in the eastern parishes in localities where eradication of diseased plants now serves no practical purpose.

253. As the recording of the Plant Disease Inspectors of the monthly totals of cases of Panama Disease dealt with in each parish, which has been continued since the disease was first recognised, is now of little value as an indication of the extent of the disease, an attempt was made to assess this by other means in some of the less badly affected areas. In the chief banana growing districts of the centre and west end of the Island a survey was carried out by the Plant Disease Inspectors in these districts, and the total acreage of the banana lands was classified according to the average number of cases of Panama Disease per acre. At the same time the areas of potential banana land, other major crops, grass land and bush in these districts were tabulated. It is hoped that by an annual repetition of the survey of the banana acreage it will be possible to assess more accurately the actual progress of the disease by comparison of the relative proportions of the land falling into each grade year by year.

254. Owing to recent drastic restrictions in travelling it has been decided that as from 1st April the Plant Disease Inspectors will join forces with the Instructors of the Jamaica Agricultural Society so as to give each individual a smaller area to cover. The Plant Disease Inspectors who now become Instructors will still carry out Plant Protection duties in their smaller districts and the Instructors of the Jamaica Agricultural Society will to some extent assume the duties of Plant Disease Inspectors. Under the new arrangement however it will not be possible to continue the detailed monthly returns of Panama Disease cases in each parish but as already indicated these have now ceased to be of much value.

255. *Speckle*.—An investigation was made of the Speckle disease of banana leaves and it was found to be due to the same fungus as that responsible for this disease in Surinam (1). A study of the fungus was made and material sent to the Imperial Mycological Institute, Kew. Further details will be published in due course.

256. *Plantain Wilt*.—A case of this in a Kingston garden was suspected to be due to Moko Disease (*Bacterium solanacearum*, E.F. Sm.) but from the one specimen seen, the organism was not isolated.

257. *Scab*.—The black scabs typically appearing on the leaves and fruit of the 'Tiger' Plantain were recognised as being similar to those described and figured by Wardlaw in his account of a disease of 'Black' Plantains in Martinique (2). A similar scab was observed in a few cases causing a slight blemish of Gros Michel Banana Fruit in north St. Mary. The scabs are apparently entirely superficial and are possibly due to insect injury.

### Coconuts.

258. *Bronze Leaf Wilt*.—A survey was made of this disease in the north-west parishes along the coast. A study of the records of early responses to this disease, which has been recorded in this district since the 'nineties', viz.,

(1) Stahel. The Banana Leaf Speckle in Surinam, Tropical Agriculture xiv, No. 2, p. 42, 1937,

(2) Diseases of the Banana, C. W. Wardlaw, p. 273, 1935,

and examination of the disease in the field, confirmed the previously held opinion that the disease is not infectious and is due to environmental conditions. A report was submitted.

### Carrots.

259. *Leaf Blight*. (*Macrosporium carotae*, E. & E.).—Though only once before recorded this disease appears to be of fairly common occurrence. Its appearance is seasonal and it does not generally prove serious.

### Pimento.

260. *Browning of Trunks*.—At the end of January some Pimento trees near Dry Harbour were reported as showing rust coloured patches on the trunk and lower limbs. Examination showed this discolouration to occur on the newly forming bark, the old bark being shed at this time of the year. The discolouration was confined to the outer skin, below which was healthy green sapwood, and in some cases the discoloured tissue was already being thrown off and replaced by sound white bark. The discolouration may have been caused by scorching of the newly forming bark, during the prevailing dry weather, before it had time to harden.

### Sisal.

261. *Leaf Spot*.—A sooty black spot was reported on sisal leaves at Lititz in February. The spot was due to an *Ascomycete Capnodiaceae*, which has yet to be named. It appeared to be largely superficial, but in some cases caused lesions on the leaves.

## Newly Recorded Diseases.

262. The following diseases were recorded for the first time in Jamaica:—

Alfalfa, Collar Rot & Wilt, *Diplotia* sp., associated; Baited Wood (*Dipholis salicifolia*, ADC), Leaf Spot of Seedlings, *Cylindrocium* sp. (near *C. scoparium* Morgan); Gerbera, Leaf Spot, *Cercospora* sp.; Ground Nut, Collar Rot, *Sclerotium rolfsii* Sacc.; Maize, Ear



Rot, *Botryodiplodia theobromae* Pat.; Onion, Leaf Spot, *Alternaria porri* (Ellis) Neergard; Rice, Brown Spot, *Helminthosporium oryzae*, Breda de Haan., Sugar Cane, Wither Tip, *Hormiactella sacchari*, Johnson, associated; Turnip, Leaf Spot, *Colletotrichum higginsianum* Sacc.

### Orchid Seedlings.

263. The raising of orchid seedlings asymbiotically has been continued and a number of crosses were successfully propagated for the Horticulturist.

## LEAF SPOT CONTROL DIVISION.

264. Mr. H. H. Croucher, Leaf Spot Control Officer, reports as follows:—

265. The intensity of leaf spot disease incidence has, except for minor fluctuations, remained similar to that in the preceding year. There has been a slight increase in incidence in the eastern sections of the Island which are however still among the least affected. Control measures are necessary in only small areas of the parish of Portland, an area of very heavy rainfall.

266. In general the year has been satisfactory for the growth of bananas. Apart from the disease the outstanding feature has been the decrease in the areas of bananas on steep hill-sides. The Montego Bay River Valley affords an excellent example of the general deterioration which is in progress. The valley, which still contains the largest block of bananas in Jamaica, is showing markedly the effects of soil erosion. Whereas, until recently, the whole area formed an almost uninterrupted field of bananas, the ridges are now exposed and banana cultivation is receding down the slopes of the secondary ridges in the valley. Panama Disease is more materially affecting sections of the slopes though until recently it has been confined to the lower sections only.

267. Excellent control of Leaf Spot Disease by spraying with Bordeaux or Perenox has been maintained particularly by the larger growers who perform their control measures conscientiously and regularly. There is a tendency for growers to change from Perenox to Bordeaux solely by reason of the more ready visibility and consequent easier supervision of the latter.

268. Now that nearly all bananas are being used for food locally the effect of Leaf Spot in causing premature ripening has been more marked.

### Supervision.

269. The duties of officers of the Division in controlling the supplies of spraying material and equipment issued by the Banana Leaf Spot Control Board have been modified through the introduction of a system, in two divisions of the Island, by which instead of each company being responsible for the supervision of the spraying of its contractors a joint committee undertakes the supervision of the spraying of all growers. The Board has given these Committees wide powers in connection with the distribution of equipment and material and the duties of the Government Officers have thereby been lessened. The system has not been extended to the Eastern Division.

270. Routing inspections of depots have been undertaken.

### General Duties.

271. The staff of the Division includes the only two qualified Senior Agricultural Officers in the Department and as a result of the limitations of war conditions these officers have been called upon to perform many additional duties relating to the general administration of Departmental work.

### Investigational Work.

272. The development of two Experimental Stations has progressed.

273. Preliminary experiments in regard to fertiliser have been reaped for the first crop while others are now coming into bearing.

274. Both Stations have been developed with a view to minimising soil erosion and trials and experiments of soil erosion control measures with bananas have been undertaken.

275. Experiments involving density of population have been seriously interfered with by the incidence of Panama Disease but sufficient information has been obtained from most experiments to enable tentative conclusions to be drawn.

276. The areas which have been particularly subject to Panama Disease are being used for trials of immune varieties in co-operation with the Government Botanist.

277. These Stations have also been used for experimental work with food crops and with potential export crops.

### Mycological Work.

278. Considerable progress has been made during the year in elucidating problems which required clarification in connection with the etiology of banana leaf spot.

### Relief Projects.

279. The Officers of the Division have, through the year, taken over the administration of certain Relief Projects hitherto operated under the Food Production Board. The policy of these projects has been changed from that of providing relief measures solely, by the employment of labour in food production, to a more constructive policy in which an attempt is made to administer agricultural methods and the cultivation of new crops which may improve the agricultural production of the surrounding area and thereby decrease the necessity for relief work.

280. The projects are affording valuable practical experience in the application of methods and policies advocated by the Department of Agriculture. It has been possible to introduce simple soil erosion control measures which have also afforded valuable experience and have acted as demonstrations for surrounding areas.

281. The projects which are at present in operation are Belvedere, approximately 650 acres, Lucky Hill, approximately 850 acres, and ten small projects totalling 175 acres.

### Soil Erosion.

282. The information obtained from work on soil erosion control in the Experimental Stations and in the Relief Projects has enabled Officers of the Division to advise and assist private growers in adopting such methods. Lectures and demonstrations on soil erosion have been given.



## D. FORESTRY.

283. Mr. C. Swabey, Conservator of Forests, reports as follows:—

### General.

284. A revised and elaborated statement of the policy and programme of this Division was submitted to Government, while a 10 year forestry development scheme was submitted to the Comptroller for Development and Welfare in the West Indies.

285. This development scheme was approved by the Local Government and by Sir Frank Stockdale and at the end of the year was under consideration in England.

### Forest Area.

286. The forest area of the Island is estimated as follows:—

|                             | As at 31.3.41. | As at 31.3.42. |
|-----------------------------|----------------|----------------|
| Forest Reserve .. ..        | 209,209        | 199,189        |
| Unreserved Crown Land .. .. | 40,000         | 40,000         |
| Private Forests .. ..       | 200,000        | 200,000        |
| Total forest land .. ..     | 449,209        | 439,189        |

Area of Forest Reserve represents 7% of total land area.

### Forest Legislation.

287. Provision for the control of hunting and shooting in Forest Reserves was provided by Law No. 34 of 1941, The Forest (Amendment) Law, 1941. Total prohibition of the sale of bark of mahoe (*Hibiscus elatus*), dogwood (*Ichthyomethia piscipula*) and mahogany (*Swietenia mahagoni*) was provided by Law 7 of 1942, The sale of the bark of trees (Prevention) Amendment Law, 1942.

### Forest Settlement.

288. On the 17th July, 1941, 2,950 acres of land included Land Settlement Reserves and additions to the Blue Mountain Reserve were gazetted as Forest Reserve. The purchase of 587 acres of private land in the Blue Mountains was completed, while in the same area private land totalling 844 acres was leased with option to purchase. Reserved areas on Land Settlements totalling 962 acres were taken over by the Division. The Portland Ridge Reserve (7,700 acres) fell within the area leased to the United States Government and was therefore released, while the Ballintoy and Fort Stewart Reserves (3,195 acres) were found to be so heavily cut up by subdivision as to be quite unsuitable for reservation and were therefore released.

289. The bulk of the field work for a complete Island Forest Settlement Report was completed; the senior staff examined many thousands of acres of Crown Land in the course of this work.

290. During the year 29½ miles of new forest reserve boundaries were selected and demarcated; of this, 21½ miles were traversed by the Division with chain and compass.

291. Forest Surveys undertaken by the Survey Department amounted to 42 miles.

### Maintenance of Forest Reserves.

292. A total length of 69½ miles of Reserve boundary was cleared, part of this included blazing and hammer marking in addition to normal bushing. All forest trails were re-measured, 44 chains of 4' solid bridle trail and 3½ miles of blazed trail were constructed; total length of trails maintained at 31st March, 1942, being 61 miles. The Rangers quarters at Wait-a-Bit was completed, painted, and new Rangers quarters at Quickstep constructed; the Blue Mountain Peak hut was taken over by the Division and extensive repairs carried out. Two bush huts were constructed and other buildings maintained and improved.

293. Forest offences totalled 123 (135 in 1940-41) of which 51 (47) were for larceny of timber, 47 (61) for encroachment on Reserves and 25 (27) for cattle trespass. Costs involved by the Department were £41, while £86 was received for sale of seized lumber. The number of fires reported on Forest Reserves was 6, covering 14 acres; these were grassland fires and no damage was done to woodland. No fires were reported from protected catchment areas.

### Afforestation.

294. The vote for Forest Conservation remains the same as when the Division was first started, while labour rates and costs of materials have increased and maintenance charges of necessity have steadily risen. Consequently it was not possible to undertake any extension of afforestation except on a negligible scale. The number of main nurseries was reduced to six (with 4 minor nurseries) and 46,500 plants were raised; of these 12,000 were distributed to private persons, 14,000 were planted on new areas in Reserves, and 20,000 were used for supplying previously planted areas. New areas re-afforested were approximately as follows:—

|                     |          |
|---------------------|----------|
| Direct Sowing .. .. | 20 acres |
| Planting .. ..      | 18 acres |
| Total .. ..         | 38 acres |

295. It has not been possible to embark on any definite planting scheme and this work must be looked upon as largely experimental.

296. Growth of Mahoe (*Hibiscus elatus*) in the Blue Mountains continues to be satisfactory while this species and Cedar (*Cedrela mexicana*) in agricultural contracts at Shooter's Hill show considerable promise. The planting of Cedar with banana shade appears to afford considerable protection against the shoot borer (*Hyposiphylia grandella*). Growth of *Pinus massoniana* on degraded mountain soils is outstanding and it is regrettable that seeds from Hong Kong can no longer be obtained. Germination problems of *Juniperus lucayana* have not been solved, but, when this is done, this species should be able to take the place of Pine under similar site conditions. Growth of *Acacia molissima* and *Acacia decurrens* at 5000' is most encouraging. Direct sowing of *Pithecolobium arboreum* and *Calophyllum rekoii*, var *antillarum* at Hermitage also shows promise in heavy grass areas. The Arboretum at Hope was extended.

### Utilisation.

297. During the year 267 licences to cut forest produce from Crown Lands and Reserves were issued; outturn of timber and fuel amounted to 78,221 c. ft. (46,518 c. ft.) with an estimated market value of £8,700. The principal species used were:—

|                                                    |                 |
|----------------------------------------------------|-----------------|
| Cedar ( <i>Cedrela mexicana</i> ) .. ..            | 71,702 ft. B.M. |
| Broadleaf ( <i>Terminalia latifolia</i> ) .. ..    | 40,230 "        |
| Bulletwood ( <i>Sapotaceae spp.</i> ) .. ..        | 30,497 "        |
| Shod bark ( <i>Pithecolobium alexandri</i> ) .. .. | 28,961 "        |
| Mahogany ( <i>Swietenia mahagoni</i> ) .. ..       | 18,986 "        |

298. The timber depot at Clarendon Park was put into operation by the Marketing Department and handled 729,000 ft. B.M. of native lumber, mainly hand-sawn boards and scantling. There was considerable demand for timber for defence purposes.

299. In conjunction with the timber depot, seasoning experiments were carried out and periodical moisture content determinations were made on samples of all species handled. In addition M.C. % tests were made at the Hope workshop; displays of native timbers were arranged and samples prepared for distribution.

### Finance.

300. The total expenditure of the Division amounted to £6,603 (£6,087) while Revenue amounted to £1,559 (£1,054) distributed as follows:—

|                                       |        |
|---------------------------------------|--------|
| Timber Sales .. ..                    | £1,046 |
| Rentals .. ..                         | 60     |
| Sale of Christmas Trees .. ..         | 89     |
| Subventions by Water Commission .. .. | 350    |
| Sundries .. ..                        | 14     |

301. The salary and expenses of 8 Forest Rangers and of the Forest Surveyor were carried on the Estimates of the Lands and Survey Departments respectively.



### Administration.

302. District re-organisation was nearly completed during the year in collaboration with the Lands Department and control of Crown Lands tenants, etc., is steadily improving.

303. Approval was obtained for raising 3 Forest Ranger Grade II posts to the status of Grade I; pending the approval of further office assistance, one Forest Ranger was seconded as Technical Assistant; 3 Forest Rangers were dismissed, 1 died and 4 were appointed.

304. £1,300 was expended on labour; average employment was 4 days per week and average pay was 3/- per day, equivalent to a permanent labour force of 43.

### Miscellaneous.

305. Recreational use permits to the number of 56 (5) covering 439 (23) persons were issued; these were mainly for the use of forest huts and camping permits; the hut at Blue Mountain Peak was taken over from the Tourist Board, thoroughly repaired and maintained; rough accommodation for hikers was provided at Cinchona on behalf of the Superintendent of Gardens.

306. A detailed firewood tonnage survey on 1,200 acres was undertaken on behalf of the Commissioner of Lands in connection with arbitration proceedings and the findings were accepted by both parties.

307. The following problems were investigated in connection with Committees on which the Conservator of Forests served: tree planting projects of 4-H Clubs (planting material and advice supplied): grading and storage of imported lumber (recommendations submitted to Government): organisation of timber depots (advice in stacking and seasoning supplied): wild life conservation (data collected on destructive habits of Jabbering Crow, etc.).

308. A pamphlet on "The Principal Timbers of Jamaica" was published and other articles were published in various periodicals.

309. Grateful acknowledgement for assistance in the work of the Division is made to the Director of Surveys, the Crown Lands Officer, the Crown Solicitor and to officers of the Department of Agriculture; my thanks are also due to the staff of the Forest Division, who with the exception of few, have worked exceedingly well.



## APPENDIX 1.

(Standard Form 2)

## STATEMENT IN ACRES OF PROGRESS IN FOREST RESERVATION AND DEMARCATION DURING THE YEAR ENDED 31ST MARCH, 1942.

| Map No. | Name of Reserve.        | Reserves approved but not finally constituted. |                       |                               | Reserves constituted but not finally demarcated. |              |                       |        | Reserves constituted and demarcated. |               |                       |      | Grand Total<br>31.3.42. | Remarks. |                |
|---------|-------------------------|------------------------------------------------|-----------------------|-------------------------------|--------------------------------------------------|--------------|-----------------------|--------|--------------------------------------|---------------|-----------------------|------|-------------------------|----------|----------------|
|         |                         | on<br>1.4.41                                   | Added during<br>year. | Trans.<br>to Col.<br>8 or 12. | on<br>31.3.42                                    | on<br>1.4.41 | Added during<br>year. | Rel.   | on<br>31.3.42.                       | on<br>1.4.41. | Added during<br>year. | Rel. |                         |          | on<br>31.3.42. |
| (1)     | (2)                     | (3)                                            | (4)                   | (5)                           | (6)                                              | (7)          | (8)                   | (9)    | (10)                                 | (11)          | (12)                  | (13) | (14)                    | (15)     |                |
|         | <i>Protection Res.—</i> |                                                |                       |                               |                                                  |              |                       |        |                                      |               |                       |      |                         |          |                |
| 2       | Dolphin Head            | ..                                             | ..                    | ..                            | ..                                               | 300          | ..                    | ..     | 300                                  | ..            | ..                    | ..   | ..                      | 300      |                |
| 3       | Burnt Savanna           | ..                                             | ..                    | ..                            | ..                                               | 769          | ..                    | ..     | 769                                  | ..            | ..                    | ..   | ..                      | 98       |                |
| 9       | Bull Head               | ..                                             | ..                    | ..                            | ..                                               | ..           | ..                    | ..     | ..                                   | 1,309         | ..                    | ..   | ..                      | 769      |                |
| 10      | Kellits                 | ..                                             | ..                    | ..                            | ..                                               | ..           | ..                    | ..     | ..                                   | 156           | ..                    | ..   | ..                      | 1,309    |                |
| 21      | Charlton                | ..                                             | ..                    | ..                            | ..                                               | ..           | ..                    | ..     | 87,704                               | ..            | ..                    | ..   | ..                      | 156      |                |
| 32      | Blue Mountains          | 4,827                                          | ..                    | 1,638                         | 3,189                                            | 86,066       | 1,638                 | ..     | ..                                   | ..            | 422                   | ..   | ..                      | 90,893   |                |
| 34      | Petersville             | 422                                            | ..                    | 422                           | ..                                               | ..           | ..                    | ..     | 600                                  | ..            | ..                    | ..   | ..                      | 422      |                |
| 35      | Haycock Hill            | ..                                             | ..                    | ..                            | ..                                               | 600          | ..                    | ..     | ..                                   | ..            | ..                    | ..   | ..                      | 600      |                |
| 36      | Belfont                 | 154                                            | ..                    | ..                            | 154                                              | ..           | ..                    | ..     | ..                                   | ..            | ..                    | ..   | ..                      | 154      |                |
| 39      | New Forest              | 397                                            | ..                    | 397                           | ..                                               | ..           | ..                    | ..     | ..                                   | ..            | 397                   | ..   | ..                      | 397      |                |
| 41      | Greenock                | 122                                            | ..                    | 122                           | ..                                               | ..           | ..                    | ..     | ..                                   | ..            | 122                   | ..   | ..                      | 122      |                |
| 45      | Fort Stewart            | 195                                            | ..                    | 195                           | ..                                               | ..           | ..                    | ..     | ..                                   | ..            | ..                    | ..   | ..                      | ..       |                |
| 46      | Norris; A, B, C         | ..                                             | 603                   | ..                            | 603                                              | ..           | ..                    | ..     | ..                                   | ..            | ..                    | ..   | ..                      | ..       |                |
| 48      | Chepstowe               | 114                                            | ..                    | 114                           | ..                                               | ..           | ..                    | ..     | ..                                   | ..            | 114                   | ..   | ..                      | 603      |                |
| 52      | Platfield; A, B, C, D   | 11                                             | ..                    | 11                            | ..                                               | ..           | ..                    | ..     | ..                                   | ..            | 11                    | ..   | ..                      | 114      |                |
| 53      | Spring Garden           | 47                                             | ..                    | 47                            | ..                                               | ..           | ..                    | ..     | ..                                   | ..            | 47                    | ..   | ..                      | 11       |                |
| 54      | Spring Vale             | 142                                            | ..                    | 142                           | ..                                               | ..           | ..                    | ..     | ..                                   | ..            | 142                   | ..   | ..                      | 47       |                |
| 55 & 56 | Middleton Stream A & B  | 58                                             | ..                    | 58                            | ..                                               | ..           | ..                    | ..     | ..                                   | ..            | 58                    | ..   | ..                      | 142      |                |
| 57      | Ramble                  | 133                                            | ..                    | 133                           | 133                                              | ..           | ..                    | ..     | ..                                   | ..            | ..                    | ..   | ..                      | 58       |                |
| 58      | Armada                  | ..                                             | 72                    | ..                            | 72                                               | ..           | ..                    | ..     | ..                                   | ..            | ..                    | ..   | ..                      | 133      |                |
| 37      | Dromilly                | ..                                             | 200                   | ..                            | 200                                              | ..           | ..                    | ..     | ..                                   | ..            | ..                    | ..   | ..                      | 72       |                |
|         | Total                   | 6,622                                          | 875                   | 3,146                         | 4,351                                            | 87,735       | 1,638                 | ..     | 89,373                               | 1,563         | 1,313                 | ..   | 2,876                   | 96,600   |                |
| 6       | <i>Production Res.—</i> |                                                |                       |                               |                                                  |              |                       |        |                                      |               |                       |      |                         |          |                |
| 6b      | Cockpit Country         | ..                                             | ..                    | ..                            | ..                                               | 51,000       | ..                    | ..     | 51,000                               | ..            | ..                    | ..   | ..                      | 51,000   |                |
| 6c      | Ruthven                 | ..                                             | ..                    | ..                            | ..                                               | 1,300        | ..                    | ..     | 1,300                                | ..            | ..                    | ..   | ..                      | ..       |                |
| 6d      | Shuna                   | ..                                             | ..                    | ..                            | ..                                               | 1,350        | ..                    | ..     | 1,350                                | ..            | ..                    | ..   | ..                      | ..       |                |
| 6e      | Discovery               | ..                                             | ..                    | ..                            | ..                                               | 650          | ..                    | ..     | 650                                  | ..            | ..                    | ..   | ..                      | ..       |                |
| 7       | Dry Harbour Mtns., W.   | ..                                             | ..                    | ..                            | ..                                               | 12,500       | ..                    | ..     | 12,500                               | ..            | ..                    | ..   | ..                      | ..       |                |
| 8       | Dry Harbour Mtns., E.   | ..                                             | ..                    | ..                            | ..                                               | 14,200       | ..                    | ..     | 14,200                               | ..            | ..                    | ..   | ..                      | ..       |                |
| 18      | Ballintoy               | ..                                             | ..                    | ..                            | ..                                               | 3,000        | ..                    | 3,000  | ..                                   | ..            | ..                    | ..   | ..                      | ..       |                |
| 19      | Camperdown              | ..                                             | ..                    | ..                            | ..                                               | 1,600        | ..                    | ..     | 1,600                                | ..            | ..                    | ..   | ..                      | ..       |                |
| 20      | St. Faith               | ..                                             | ..                    | ..                            | ..                                               | 720          | ..                    | ..     | 720                                  | ..            | ..                    | ..   | ..                      | ..       |                |
| 23      | Portland Ridge          | ..                                             | ..                    | ..                            | ..                                               | 7,700        | ..                    | 7,700  | ..                                   | ..            | ..                    | ..   | ..                      | ..       |                |
| 25      | Heathshire Hills        | ..                                             | ..                    | ..                            | ..                                               | 19,319       | ..                    | ..     | 19,319                               | ..            | ..                    | ..   | ..                      | ..       |                |
|         | Total                   | ..                                             | ..                    | ..                            | ..                                               | 113,289      | ..                    | 10,700 | 102,598                              | ..            | ..                    | ..   | ..                      | 102,589  |                |
|         | Grand Total             | 6,622                                          | 875                   | 3,146                         | 4,351                                            | 201,024      | 1,638                 | 10,700 | 191,962                              | 1,563         | 1,313                 | ..   | 2,876                   | 199,189  |                |

Released.

U.S. Base authorities



## APPENDIX II.

(Standard Form X)

IMPORTS AND EXPORTS OF TIMBER AND OTHER FOREST PRODUCTS FOR YEAR ENDED 31st DECEMBER, 1941.

| Category.                      | Gross Imports.     |            | Gross Exports.     |            | Net Imports or Exports. |            | Average Annual net Imports or Exports for quinquennium ended 31.12.41. |            | Percentage value of gross imports or exports from or to different Sources or Destinations during year ended 31.12.41. |          |
|--------------------------------|--------------------|------------|--------------------|------------|-------------------------|------------|------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------|----------|
|                                | Hundreds of c. ft. | Value in £ | Hundreds of c. ft. | Value in £ | Hundreds of c. ft.      | Value in £ | Hundreds of c. ft.                                                     | Value in £ | Imports.                                                                                                              | Exports. |
| <i>Timber—</i>                 |                    |            |                    |            |                         |            |                                                                        |            |                                                                                                                       |          |
| Sawn ..                        | 13,728             | 207,516    | ..                 | ..         | 13,728                  | 207,516    | 13,189                                                                 | 171,789    | Canada 53                                                                                                             | 1        |
| Logs ..                        | ..                 | ..         | ..                 | 1,308      | ..                      | 1,308      | ..                                                                     | 1,601      | U. S. A. 24                                                                                                           | 48       |
| Roundwood ..                   | ..                 | 968        | ..                 | ..         | ..                      | 968        | ..                                                                     | 637        | U. K. 14                                                                                                              | 30       |
|                                |                    |            |                    |            |                         |            |                                                                        |            | Bahamas 3                                                                                                             | ..       |
| Total Timber                   | 13,728             | 208,484    | ..                 | 1,308      | 13,728                  | 207,176    | 13,189                                                                 | 170,825    |                                                                                                                       |          |
| <i>Wood Products—</i>          |                    |            |                    |            |                         |            |                                                                        |            |                                                                                                                       |          |
| Shingles ..                    | ..                 | 11,783     | ..                 | 86         | ..                      | 11,697     | ..                                                                     | 6,195      | Newfoundland 1                                                                                                        | 5        |
| Matches ..                     | ..                 | ..         | ..                 | 3,998      | ..                      | 3,998      | ..                                                                     | 1,021      | Spain ..                                                                                                              | 3        |
| Paper and pulp products ..     | ..                 | 201,888    | ..                 | ..         | ..                      | 201,888    | ..                                                                     | 159,756    | Others 5                                                                                                              | 13       |
| Other cellulose products ..    | ..                 | 109,383    | ..                 | ..         | ..                      | 109,383    | ..                                                                     | 132,272    |                                                                                                                       | 100      |
| Furniture ..                   | ..                 | 6,053      | ..                 | 178        | ..                      | 5,875      | ..                                                                     | 13,255     |                                                                                                                       | 100      |
| Hoops, shooks, staves ..       | ..                 | 141,720    | ..                 | ..         | ..                      | 141,720    | ..                                                                     | 92,910     |                                                                                                                       |          |
| Other wooden ware ..           | ..                 | 9,892      | ..                 | ..         | ..                      | 9,892      | ..                                                                     | ..         |                                                                                                                       |          |
| Total Wood Products ..         | ..                 | 480,719    | ..                 | 4,262      | ..                      | 476,457    | ..                                                                     | 405,407    |                                                                                                                       |          |
| <i>Minor Forest Products—</i>  |                    |            |                    |            |                         |            |                                                                        |            |                                                                                                                       |          |
| Drugs and Spices ..            | ..                 | 7,579      | ..                 | 6,311      | ..                      | 1,268      | ..                                                                     | 7,236      |                                                                                                                       |          |
| Fibres and flosses ..          | ..                 | 4,767      | ..                 | 85         | ..                      | 4,682      | ..                                                                     | ..         |                                                                                                                       |          |
| Gums and resins ..             | ..                 | 26,192     | ..                 | ..         | ..                      | 26,192     | ..                                                                     | ..         |                                                                                                                       |          |
| Incense and perfume woods ..   | ..                 | ..         | ..                 | 88         | ..                      | 88         | ..                                                                     | 154        |                                                                                                                       |          |
| Tanstuffs and dyestuffs ..     | ..                 | 469        | ..                 | 63,269     | ..                      | 62,800     | ..                                                                     | 93,030     |                                                                                                                       |          |
| Cork ..                        | ..                 | 5,253      | ..                 | ..         | ..                      | 5,253      | ..                                                                     | ..         |                                                                                                                       |          |
| Total Minor Forest Products .. | ..                 | 44,260     | ..                 | 69,753     | ..                      | 25,493     | ..                                                                     | 100,420    |                                                                                                                       |          |
| Grand Total ..                 | ..                 | 733,463    | ..                 | 75,323     | ..                      | 658,140    | ..                                                                     | 475,812    |                                                                                                                       |          |

## E.—PUBLICATIONS.

310. The following departmental publications were issued during the year ended 31st March, 1942:—

Bulletin No. 28 (New Series)—“A Survey of the Yields of Sugar Cane in Jamaica 1939-1940”. Report by R. F. Innes, Actg. Agricultural Chemist.

Bulletin No. 29 (New Series)—“The Principal Timbers of Jamaica”—By C. Swabey, Conservator of Forests.

Bulletin No. 30 (New Series)—“Citrus Pests Investigation—Report on a Visit to Jamaica in November 1940”—By R. G. Fennah, Entomologist—Citrus Pests Investigation, Windward and Leeward Islands.

Annual Report for the year ending 31st March, 1941.

Reprint: Banana Leaf Spot Investigations 2. The Sexual Spore Stage of the Leaf Spot Fungus—By R. Leach, Mycologist.



## SECTION III—LEGISLATION.

311. The following laws relating to Agriculture were passed during the year:—

| No. | Date Assented to | Short Title.                                                                    | Chief Provisions.                                                                                                                                                                                                             |
|-----|------------------|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3   | 1941<br>29.4.41  | The Coconut Oil Products (Excise Duty) (Amendment) Law, 1941.                   | Adding Lard Substitutes to the products on which Excise Duty is payable and increasing the duty payable on Soap and Butter substitutes to 3/6 per 100 lbs. and 15/- per 100 lbs. respectively.                                |
| 4   | 29.4.41          | The Coconut Industry Aid (Amendment) Law, 1941.                                 | Fixing the duty on edible oil manufactured in the Island at 1/- per gallon on refined oil and 4d. per gallon on unrefined oil.                                                                                                |
| 5   | 29.4.41          | The Tobacco Duty (Amendment) Law, 1941                                          | Fixing the excise duty to be paid on cigars, cigarettes and Tobacco.                                                                                                                                                          |
| 1   | 29.4.41          | The Edible Oil Dealers (Licence) (Repeal) Law, 1941.                            | Repealing the Edible Oil Dealers (Licence) Law, 1939.                                                                                                                                                                         |
| 4   | 27.5.41          | The Forest (Amendment) Law, 1941                                                | Preventing the indiscriminate shooting and capture of animals on Forest Reserves by prohibiting shooting and carrying arms in these Reserves.                                                                                 |
| 5   | 27.5.41          | The Jamaica Coconut Producers Association Ltd. Debenture (Amendment) Law, 1941. | Providing for the payment of Sinking Fund on Debentures on a sliding scale based on the selling price of coconuts and copra instead of at a fixed rate and fixing a minimum payment.                                          |
| 3   | 18.6.41          | The Agricultural Loans (Recording and Fees) Exemption Law, 1941                 | Providing exemption from payment of Stamp Duties and Registration and Recording Fees on instruments effecting certain agricultural and other loans.                                                                           |
| 9   | 16.7.41          | The Cornmeal (Excise Duty) Law, 1941.                                           | Imposing an excise duty of 1/6 per bag on cornmeal manufactured in Jamaica and providing for the granting of Licences to manufacturers of cornmeal.                                                                           |
| 5   | 23.12.41         | The Cane Farmers (Incorporation and Cess) Law, 1941.                            | Incorporating the All-Island Jamaica Cane Farmers Association and imposing a cess, for the purposes of such Association, upon all canes supplied by cane farmers to sugar manufacturers, and for purposes incidental thereto. |
| 7   | 1942.<br>4.3.42  | The Sale of the Bark of Trees (Prevention) (Amendment) Law, 1942.               | Prohibiting the selling, offering for sale or buying of the bark of Mahogany, Mahoe and Dogwood.                                                                                                                              |
| 8   | 4.3.42           | The Country Fires Law, 1942                                                     | Prohibiting the setting of fire to any crop except growing sugar cane for the purpose of ridding it of any vine or pest; and providing for the burning of trash under certain conditions.                                     |

G. A. JONES,  
Director of Agriculture.



## APPENDIX.

**ANNUAL REPORT**  
of the  
**Agricultural Officer, Turks and Caicos Islands, for the period ended**  
**31st March, 1942.**

**WEATHER.**

The summer of 1941 was remarkable for the small amount of rain that occurred in the Caicos Islands. In June, 2.07 inches and in July 0.18 inches were recorded at Kew on the island of North Caicos. This relatively low precipitation at the time when the ears should have been making their greatest development ruined the summer crop of maize. It was however noteworthy that on the Government farm at Kew where the maize plots were mulched a summer crop was reaped.

The total rainfall during the period under review was 54.47 inches.

**VARIETAL TRIALS.**

Varieties of the following plants supplied by the Agricultural Chemist, Jamaica, were planted in plots of one-eightieth acre:—

- Peanut (five varieties)
- Adlay
- Pigeon Pea
- Mung (three varieties)
- Velvet Bean (three varieties)
- Edua Pea
- Jerusalem Pea (two varieties)
- Calopogonium muconoides
- Soya Bean (five varieties)
- Rice (six varieties)
- Sun Flower (two varieties)

The rice varieties ACR 12, ACR22 and ACR24 were outstanding and have proved suited to local conditions in the winter. The Edua Pea (AC EC 227) made a good cover and realised a satisfactory yield. It proved superior to the Velvet Bean as cover crop. The Jerusalem Pea (AC B145) also made a good cover. The Pigeon Pea AC B148 comes into bearing earlier than local varieties and bears well. The only disadvantage of this Pigeon Pea is the small size of the peas.

Failures in this trial were Adlay and the Peanut varieties. This is the second time that Adlay has been tried in the demonstration plots. In the first trial as in the second it was a failure.

**CULTURAL EXPERIMENT.**

This experiment was continued from the previous year. The treatments were as follows:—

- A. The bush on the land was cut and burnt leaving all stones and stumps. (This is the native method).
  - B. The bush was removed; the land was stumped and all stones removed to a *depth of one foot*.
  - C. The bush was removed, the land stumped and all the *surface* stones were cleared off.
  - D. The bush and stumps were removed (leaving all stones). In order to shew up the differences between the treatments, more readily no manure was added to any of the plots. Classifying these treatments by their yields in the winter crop the order was:—
    1. A and B (best)
    2. C and D
- In the previous year the order was
1. A (best)
  2. C and D
  3. B (worst)

**GENERAL.**

As an alternative to the tedious method of removing the stones from the fields and placing the stones in rows, Mr. A. J. Wakefield, C.M.G. Inspector General of Agriculture for the West Indies, suggested that the stones be placed in heaps here and there in the field. The heaps should be placed in spots where there is an outcropping of rock. A field has been laid out in this manner.

The training of the Agricultural cadets was continued and one of them was sent to Holmwood Practical Training Centre in Jamaica.

The school garden at Kew maintained a good standard. The Bottle Creek and Lorimers gardens were also satisfactory, but not enough interest and co-operation was shewn by those in charge at Blue Hills.

H. F. CARRINGTON.  
Agricultural Officer.







